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APPLICANT : HITACHI METALS LTD;

INVENTOR : TANIGUCHI FUMITAKE;

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TITLE : RARE-EARTH MAGNET

ABSTRACT : PROBLEM TO BE SOLVED: To inhibit the oxidization of rare-earth elements being contained in an R-T-B rare-earth magnet alloy and to reduce the B-rich phase of a rare-earth magnet while an increase in the coarseness of the $R_2T_{14}B$ main phase of the magnet is suppressed by a method wherein the magnet has a composition consisting of R, B, Co, M, oxygen, nitrogen and carbon, which respectively have a specified wt.%, with the balance of Fe, the coercive force of the magnet at a specified temperature is specified and at the same time, the area ratio of the B-rich phase is specified.

SOLUTION: A rare-earth magnet has a composition consisting of 27.0 to 31.0 wt.% of R (The R is one kind of the element or more than two kinds of the elements out of rare-earth elements including Y.), 0.8 to 1.02 wt.% of B, 0.5 to 50 wt.% of Co, 0.01 to 1.0 wt.% of M (The M is one kind of the element or more than two kinds of the elements out of Ga, Al and Cu), 0.25 wt.% or lower of oxygen, 0.02 to 0.15 wt.% of nitrogen and 0.15 wt.% or lower of carbon with the balance of Fe. Moreover, the coercive force of the magnet at 20°C is 13 kOe or higher and at the same time, the area ratio of the B-rich phase of the magnet is 0 to 0.5% and the area ratio of main phase crystal grains of a grain diameter of 16 μm or wider is 10% or lower.

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